

Benicia Arsenal Storehouse (Clocktower,
Building No. 29)
Benicia Industrial Park
Benicia
Solano County
California

HABS No. CA-1828

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PHOTOGRAPHS

HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Architectural and Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20240

HISTORIC AMERICAN BUILDINGS SURVEY

BENICIA ARSENAL STOREHOUSE
(Clocktower, Building No. 29)

HABS No. CA-1828

Location:

Commandant's Lane, Benicia Industrial Park,
Benicia, Solano County, California.

USGS Benicia Quadrangle, Universal Transverse
Mercator Coordinates: 10.576210.4211080.

Present Owner:

City of Benicia, 250 "L" Street, Benicia,
California 94510

Present Occupant:

City of Benicia

Present Use:

Storage and civic functions

Significance:

This building, the largest and most important of the early Benicia Arsenal structures, was erected in 1859 as a fortified storehouse. Constructed of fine rusticated sandstone ashlar, it was originally three stories high but was extensively damaged in an explosion and fire in 1912 and rebuilt as a two-story structure. It became known as the Clocktower Building after the installation of a large clock honoring longtime arsenal commander Colonel Julian McAllister.

PART I. HISTORICAL INFORMATION

A. Physical History

1. Date of erection: 1859. This is the date in the inscription on the building and is verified by the reports of the Secretary of War for 1859 and 1860.
2. Architect: Based on the information obtained from correspondence and drawings in the National Archives, it seems that this building was designed by Commander F. D. Callender and a master builder named J. Fuss, with the help of drawings of storehouse buildings sent from other military bases. The letters make it clear that Callender had a lively personal interest in the building's design. Fuss's name is on a large drawing of what appears to be a preliminary plan for the structure.
3. Original plans and construction: Despite major alterations that were made to this building after the fire of 1912, a great deal is known about its planning and original appearance because of the relative abundance of documentary material. A series of

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volumes now at the National Archives, Record Group 156, contains copies of letters sent by the commanding officer during the period of the building's planning and construction.

The first mention is June 18, 1857, when F. Callender, the commanding officer, wrote to Col. H. K. Craig, ordnance officer in Washington, suggesting that the most pressing need of the arsenal was a new storehouse and urging that an appropriation of \$50,000 that had recently been allotted for the arsenal be used for that purpose. Callender requested tracings of recent storehouses for his study.

On November 16, 1857, he wrote that arsenal officer Col. J. W. Ripley had selected a site. He was concerned with the building's appearance, suggesting that it be executed in the fine local sandstone and writing that it should be "as handsome a building as is proper for the purpose for which it is designed, having a due regard for economy and the appropriation made for that purpose." Callender then asked for tracings of plans prepared for a stone arsenal building at Watervliet, New York, and the storehouse for small arms at the Springfield Armory, which he believed was designed by Ripley.

Callender subsequently received these tracings but in a letter of November 18, 1857, stated that they were not exactly what was needed. He wrote a letter to Alfred Mordecai, commander of the Watervliet Arsenal, asking for advice and requesting more tracings. He mentioned that he believed there was an arsenal building in New York City with towers on each corner and asked for a sketch of that building. The reason for the towers, he explained, was to prevent any possibility of attack on the storehouse by local citizens (See Supplemental Information below). By this time he obviously had a clear idea of the kind of structure he wished. His letter makes it clear that Mordecai had written enthusiastically about using iron in arsenal constructions, and subsequent letters show that Callender himself was interested in this topic.

In a letter of August 19, 1858, to Colonel Craig (See Supplemental Information below), he sent plans and estimates for the new building. The plans contained two variations, one with cast-iron window-caps and the other with stone. Callender stated that he preferred the latter. These plans were subsequently approved with some modifications, as a letter of November 19, 1858, makes clear.

The plans included here as HABS No. CA-1828-12 and -13 probably date from about the time of the August, 1858, letter. These

early plans have square towers at each corner, and are referred to in that letter. By the time of the plan included here as HABS No. CA-1828-14, the towers at the northwest and southeast corners were no longer included. Small turrets replaced them, as seen in old photos. The most interesting feature is the second-story space, which was completely clear of supports. This was made possible by suspending the entire third-story floor from metal rods hung directly from the roof trusses (See HABS No. CA-1828-17).

4. Alterations and additions: The major alteration in this building was the reconstruction necessary after the explosion and fire in the building in 1912. Old photographs show the extent of the damage (See HABS No. CA-1828-8). All of the interior was gutted, leaving a pile of twisted iron and charred wood. Interior surfaces of the walls were badly spalled, and on the south side almost the entire top story was destroyed. The building was rebuilt as a two-story instead of a three-story structure. The tower on the northeast corner of the building was truncated and a much lower wooden roof added. The turrets at the northwest and southeast corners were removed. The entire interior was rebuilt using concrete columns to support the heavy timber beams and wood floor of the second level.

The clock placed in the tower is of unknown date. It is visible on all of the early photographs and seems to be present in the 1878 Atlas view of the arsenal. It was rededicated to the memory of Julian McAllister after it was restored or replaced following the 1912 fire.

Prepared by: Robert Brueggemann
Project Historian
Historic American Buildings Survey
Summer, 1976

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: This is a fine example of early government architecture in California, monumental and with extremely fine masonry.
2. Condition of fabric: Good.

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B. Description of Exterior:

1. Over-all Dimensions: The two-story building measures 61'-6" by 177'-0". The two towers on opposite corners are 18'-6" square. The one on the southwest corner is four stories tall and the one on the northeast corner is two stories.
2. Foundation: Sandstone forming a watertable on the south side of the building and around the two towers.
3. Walls: Rusticated sandstone with watertable, belt course at second-floor line and quoins at the corners. The quoins are rock-faced on the first floor and smooth-faced above.
4. Structural system, framing: Load-bearing stone walls. Framing on the first floor is supported by concrete pilasters on the inside face of the wall and two rows of concrete columns down the centers of the building, supporting large timber beams and wood joists. Roof framing is steel fink trusses, with a center member, and wood rafters. Every other steel truss has a knee brace. Framing on the towers is heavy timber columns and beams.
5. Porches, stoops, bulkheads, etc.: There is a concrete dock across the rear (east) of the building with a concrete ramp and a retaining wall extending to the south. A wood bumper is on the concrete dock. A wood fire stair is on the north side of the building.
6. Chimneys: There are two metal flues through the roof.
7. Openings:
 - a. Doorways and doors: The principal entrance is in the center of the side. An identical entrance is on the east side. The entrance is a large three-centered segmental arch surrounded by quoins. Carved in the keystone is "Erected AD 1859." The door is a large arched, metal-covered wood door with iron strap hinges and iron slots for a large wooden bolt. In the center of the right-hand leaf on the entrance, a small passage door has been cut for access. A fire exit door cut into the north wall on the second floor from a window has wood surrounds and a flush wood door.
 - b. Windows and shutters: The second floor and gable have wooden twenty-light casement windows with stone lintels and sills and iron bars over the openings on the inside. The lintels are one large piece of stone carved in a pediment shape.

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The windows on the first floor and towers are two small vertical slit openings, with a stone mullion between, the entire width equal to the opening width on the second floor. They have hinged metal closures on the inside with bolt locks. The tower openings are boarded up with plywood.

On either side of the entrance door is a small square opening with quoining that has bi-parting metal closures with locking bolts.

8. Roof:

- a. Shape, covering: Gable roof with hip on the east side, covered with cement asbestos shingles.
- b. Cornice, eaves: The boxed eaves have a copper gutter.
- c. Towers: There is a four-story stone tower on the southwest corner of the building, flat roof covered with copper, a stone parapet and battlements, and a roof hatch. A large metal clock face has been added on the west and south faces over the windows on the fourth level. The clock with pulley weights is not operational. The only access to the tower is through the first floor of the main building. Access between floors is by ladder-type stairs.

The two-story tower on the northwest corner has a hipped roof with cement asbestos shingles. The first and second floors are accessible from the main building with no access between floors. The second floor is approximately 2'-6" below the second floor of the main building.

C. Description of Interior:

1. Floor plans:

- a. First floor: The entrance in the center of the west end leads into a large space with a stairway to the second floor on both sides. The toilets are located in the southwest corner and two storage rooms are in the northwest corner. Beyond the entrance is a chain-link gate that encloses a large storage space, some of which is partitioned off. The elevator is located near the center.
- b. Second floor: The second floor is one large assembly space with two small storage rooms and a food serving space across the east end of the building.

- c. Tower floors: The first floor of the southwest tower is the men's toilet. The second floor is vacant and the third and fourth house the clock mechanism.
2. Stairways: The principal stairway in the northwest corner is a dog-leg, open string and closed rise. The wooden handrail is on both sides of the stair and around the opening on the second floor.

The smaller stairway on the left is a closed-string dog-leg in an open well. The simple wood handrail extends to the second floor and around the opening. A simple ladder-type stair with wood handrail leads to each floor of the west tower.
3. Flooring: The first floor has concrete flooring and the second floor has narrow wood boards. Upper floors in the tower are wide wood plank.
4. Wall and ceiling finish: The wall surface is sandstone. Small storage rooms have plywood walls and ceilings, painted. The ceilings on the first floor are exposed beams and joists. The second-floor ceiling is the exposed roof decking and steel trusses.
5. Doorways and doors: Interior doors in the partitions are wood panel with wood surrounds.
6. Mechanical equipment:
 - a. Elevator: There is an elevator from the first to second floor with wood platform and plywood enclosure on three sides. All machinery is exposed overhead and there are wood gates on the opening side. The elevator is supported by large wood columns at the four corners with steel I-beam columns. There is a ladder leading up one side to the equipment on top of the I-beams.
 - b. Heating: There are two unit heaters suspended from the steel truss on the second floor.
 - c. Lighting: Lighting is simple suspended single lights with porcelain enameled shades.

D. Site:

The building faces west in what is now an industrial park. It sits on a knoll surrounded by an asphalt road with parking in front and rear. On the south and east sides the site slopes down to the bay.

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There are rows of large eucalyptus trees on the edge of the road on the west and north sides of the building. A concrete transformer structure sits to the southwest edge of the knoll.

Prepared by: John P. White
Project Supervisor
Historic American Buildings Survey
June 1976

PART III. SOURCES OF INFORMATION

- A. Architectural Drawings: The following drawings are located in the National Archives, Cartographic Division, Record Group 156:

"Plan etc. of New Arsenal for Benicia Depot, California. Drawn under direction of Capt. F. D. Callender, Comdr., by J. Fuss Mast. Builder." Red and black ink with some watercolor on heavy paper. Includes a plan, two sections, two elevations, and other details. A large, impressive drawing of what must be a preliminary design for the building, with four towers, one at each corner; otherwise it is fairly similar to the structure as built. Folder 5 (HABS No. CA-1828-12 and -13).

Untitled drawing with large number 1 on sheet. Black ink with purple and yellow watercolor on heavy paper. Includes a plan with two towers, a long side elevation, and a large number of detail drawings of the stones to be cut. These details, labeled A to T, include two or three plans of each stone needed and a penciled indication of the number of each needed. Folder 2 (HABS No. CA-1828-14).

Untitled drawing with large number 2 on sheet. Black ink, yellow and gray wash. Smaller in size but probably to the same set as the drawing above. Includes an elevation of the main door and a plan of the iron door and doorway opening. Folder 4 (HABS No. CA-1828-15).

Two doorway drawing sheets, both black ink on heavy paper. One shows the centers used in laying out the doorway, the other a variant on the doorway design including a heavy, pedimented door enframingent. The latter was not constructed. Folder 5.

Unlabeled drawing. Black ink on heavy paper. Details of cannon embrasures. Folder 5 (HABS No. CA-1828-16).

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"Main Arsenal Storehouse before Fire Destroyed Third Floor," dated April 11, 1912. Black ink on linen. This drawing was obviously made in part by tracing the first item above, and includes a plan, two elevations, and two sections of the structure. It is apparently the only drawing extant that indicates the interior arrangement of the building before the 1912 fire. Folder 3 (HABS No. CA-1828-17).

Unlabeled drawing. Ink on paper. 20x27. Shows details of stonework for front door. Each voussoir numbered. Folder 5.

Upper and lower floor plans of the building, undated. Probably a fairly recent print of a drawing. Federal Records Center, San Bruno, California, Box 405-5644.

B. Early Views:

Photograph of the structure from the southwest with a horsedrawn carriage about to enter the building. Collection Benicia Historical Society, in the possession of Gladys Wold, Benicia. This view was taken before 1912.

Photograph showing the Clocktower Building from the west with the round pool in front of the commanding officers' garden in the foreground, ca. 1908-16. Stumm postcard no. 334. Collection Emily Pine, Benicia (HABS No. CA-1828-11). There are several similar Stumm photographs in the collection of Marjorie Elmore of San Jose.

"View of the Benicia Arsenal Grounds." Lithograph of the Clocktower Building and Officer's Quarters by Hugo Hocholzer. Location of original unknown; sepia photographic print, California State Library. (HABS No. CA-1773- 8).

Three photographs of the exterior of the building from the southwest after the fire of 1912, one showing the building with smoke still rising from the interior, another looking from the west showing the gutted building, a third from the northwest showing the building with smoke coming out of the front windows. Collections Gladys Wold and Emily Pines, Benicia.

View of the building, undated. One in a strip of six photographs. California State Library, Solano County tray, gift of Olga Bandel.

The following U.S. Army photographs were photocopied by HABS in the 1950s. The originals can no longer be located.

View from the northwest. Distant view showing the Clocktower Building in the background, before 1912. (HABS No. CA-1828-5).

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View from the northwest. Photograph taken for the army by Frank Stumm. Negative, collection Marjorie Elmore, San Jose. This view is almost identical to the previous one but shows a large tower in the valley to the north of the Clocktower Building and a train on the edge of the land overlooking the straits, before 1912. (HABS No. CA-1828-6).

View from the southwest before 1912. (HABS No. CA-1828-7).

View of the interior of the building after the fire of 1912 showing the fluted iron columns and other metal members bent and twisted by the heat, ca. 1912. (HABS No. CA-1828-8).

Two views of the building from the southwest after the 1912 rebuilding. (HABS No. CA-1828-9 and -10).

C. Bibliography:

Reports of the Secretary of War for 1859, U.S. Congress, House Documents, 36th Congress. 1st Sess., 1859, Serial Vol. 1025, p. 1130; 36th Congress, 2nd Sess., 1860, Serial Vol. 1077, p. 987.

Correspondence of the Commanding Officer of the Benicia Arsenal, Record Group 156, National Archives.

D. Supplemental Information:

F. P. Callender to Alfred Mordecai, commander of the Watervliet Arsenal; Feb. 4, 1858, Correspondence of the Commanding Officer of the Benicia Arsenal, Record Group 156. National Archives.

One perhaps may smile at the idea of the necessity of propriety of an arsenal building arranged with a view of its defence against any sudden attack. But the building for small arms at this arsenal will contain nearly all the arms on this coast; and recently during the vigilance committee times here, serious apprehensions were entertained that an attempt would be made to seize them. If, therefore, you would send me plans of a building of iron or stone with towers on the angles for flank defense, you would greatly oblige me. I am out of reach of drawings, or architectural books or architect, and therefore cannot get up the requisite plans, even if I could do so, if the former were within my reach. The building, I think, should be two stories high and a basement, or if three stories, the lower story so arranged that a wagon could be driven through it from end to end or side to side.

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The basement or lower story, as the case may be, might be used to store heavy articles, perhaps shot and shells, etc., or for carriages for the armament of forts, etc.

I know that I am troubling you a great deal, but if you can send me a plan of a building for small arms with towers or any arrangement for flank defense though you may not approve the idea, you will greatly oblige me, and if iron, an estimate of the cost.

I would very much like to see a sketch of the design you mention having sent to Col. Craig for a gun carriage store house to be built of iron prepared by Architectural Iron Works Company of New York.

Excerpt of a letter from F. D. Callender to Col. H.K. Craig, Army Chief of Ordnance, August 19, 1858. National Archives, Record Group 156. Letters of the Benicia Commanding Officer.

In a separate package, by this mail, I have the honor to transmit the plans, proposed for the building referred to, to be erected on the additional grounds last assigned to this Arsenal.

It is proposed to build it principally of the Benicia sandstone quarried on the Arsenal grounds, the same material that the other permanent buildings of the Arsenal have been constructed of-brick to be used for the inner facing of the work; if brick is used, the inner face will not require to be plastered; if stone rubble work on the contrary, plastering will probably be required, although not indispensable. The roof is to be of slate. The lower or basement story is intended for gun carriage and other heavy material, with a door in each end so as to drive wagons through the whole length of the building. The other storey to be occupied for small arms and their equipment; and these to be hoisted to the upper story through hoisting ways in the floors in the center of the building with the proper machinery.

For reasons stated in my former communication referred to, it appears to me desirable that the building should partake of a defensive character. I have therefore arranged it with others on the angles with loop hole windows, and loop hole windows in the basement story. In two of the diagonal towers are the stair cases. The rooms in the other diagonal towers will serve as cleaning rooms for small arms and to store small articles and to be useful for various purposes. Thus the towers will be very useful independent of the purpose of defense. The light from the loop hole windows will be sufficient for the basement story where it is intended to store gun carriages, and these will also be

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sufficient light in the tower rooms. At Alcatraz Island, San Francisco Harbor, the Engineering Department are building defensive Barracks with loophole windows of the same opening. I have been in the lower story of these barracks and the windows afford sufficient light. These windows will cost less than the other kind of window, the opening being but six inches in the narrowest place, a man cannot get through them. That part of the walls of the building covered by the towers may be much thinner than the outside walls, indeed of such thickness only as partition walls, and might be dispensed with altogether so far as the requisite strength of the building is concerned. But it is thought on the whole that it is better to carry up these walls from the foundation making them thinner than the outside walls.

The main walls of the building to be rock work, that is the stone to be laid in regular courses, the beds and heading joints to be dressed and a draft run along the edges, the face of the stone to be left rough as they came from the quarry. The outer walls, window sills, angle of towers, belt and other projecting courses, cornice and block course above cornice caps for tower pilasters and turrets and arch stones for doors and circular windows to be cut. The drawings were first made with the design of placing cast-iron spandrel caps over windows as represented on DD front and end elevations. It was subsequently thought, however, that stone caps would better contrast with the general style of the building and be cheaper. Hence the elevation marked B was made to show the comparative effect of the two modes of finishing the windows outside. The plans as shown in the elevation B is therefore respectfully recommended.

From Report of the Secretary of War for the year ending June 30, 1860, U.S. Congress, House Documents, 36th Congress, 2nd Sess., 1860, Serial Vol. 1079, p. 987.

The new arsenal storehouse, one hundred and seventy-five feet long by sixty wide, and three stories high, with two towers on the diagonal corners, each eighteen feet square with loop-hole windows for flank defense, built on a plan approved by the Secretary of War, is up to the height of the side walls, the gables and towers remaining yet to be raised to their proper height above that level. The towers in addition to affording the means of a flank defense of the side and end walls of the building, will also receive the stairways for the different stories of the building, and the rooms in the towers will also afford storage for many small articles and besides, serve as cleaning rooms for small arms, etc. There are loop-hole windows also in the lower story of the building which is intended for the storage of gun carriages; the second and third stories, designed for the storage of small arms, etc. will have glass. The

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building is of Benicia sandstone; the exterior face of the wall is rock face, and the interior hammer dressed. The frame for the roof is prepared and ready to be raised; the slates are on hand, and the building will be completed and ready for use in a short time.

From "Report on the Capacity for Storing and Distributing Ordnance Stores and Facilities for Manufacture and Repairs at Benicia Arsenal," Report of the Secretary of War, U.S. Congress, House Documents, 56th Congress, 1st Sess., 1889, Serial Vol. 3911, p. 547.

The arsenal building of the inventory is of stone, four stories in height, 175 feet long, 61 feet wide. The basement is paved, and judging from the weight superimposed in some cases without beam deflection the other floors are capable of sustaining a distributed load of at least 200 pounds, probably 259 pounds to the square foot. Deducting from the dimensions given above, given the thickness of the wall and the area of support and hatches, there is a floor area in each story of above 9,000 square feet. The building has a hand-power hoist.

PART IV. PROJECT INFORMATION

This project was undertaken by the Historic American Buildings Survey in cooperation with Exxon Company, U.S.A. (a division of Exxon Corporation) and the Benicia Historical Society. Under the direction of John Poppeliers, Chief of H.A.B.S., the project was completed during the summer of 1976 at the Historic American Buildings Survey Field Office, Benicia, California, by John P. White (Assistant Professor, Texas Tech University), Project Supervisor; Robert Brueggmann (University of Pennsylvania), Project Historian; Kenneth Payson (Cornell University), Architect; and student assistant architects Scott Barnard (University of Pennsylvania); James L. Cook (Texas Tech University); and Gary A. Statkus (University of Illinois, Urbana-Champaign). The written data were edited by Alison K. Hoagland in the HABS Washington office in January, 1981.